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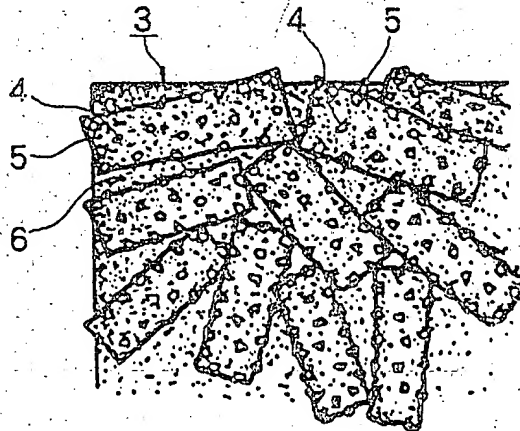
(54) [Title of the invention]  
Disc Grinder

(57) [Abstract]  
[Purpose]

This invention offers disc grinder that shows improved polishing performance through effective use of fibre containing inorganic abrasive grains that can maintain its polishing performance well over long period.

[Constitution]

A disc grinder is constructed through adhering an abrasive layer (3) that is prepared by cohering and bonding rod-shaped grains (5) containing inorganic abrasive grains (4) through a binder, on a surface of disc plate (1) through use of an adhesive agent (4).



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Amendments: There are no amendments to this patent.

[note: All names, addresses, company names, and brand names are translated in the most common manner. Japanese language does not have singular or plural words unless otherwise specified with numeral prefix or general plurality suffix form. translator's note]

## [Claims]

## [Claim item 1]

A disc grinder comprises polishing layer formed by cohering and bonding rod-shaped grains containing inorganic abrasive grains through a binder, and said polishing layer is adhered to a disc plate.

## [Claim item 2]

The disc grinder according to the claim item 1, wherein above-explained rod-shaped grains show 3 to 7 mm length and 0.5 to 2 mm diameter (  $\phi$  ) thickness.

## [Detailed explanation of the invention]

## [0001]

## [Field of industrial application]

This invention relates to a disc grinder that is used for surface polishing and the like of metal products.

## [0002]

## [Prior art]

Conventional disc grinder has a construction comprising polishing layer that is formed by cohering and bonding inorganic abrasive grains such as carborundum or alumina and the like through a binder, and by adhering this to a disc plate.

## [0003]

In addition, a disc grinder prepared by transplanting short fibre containing inorganic abrasive grains on a surface of disk plate in such manner so they are closely gathered and the ends of such hair would be in one diagonal rotary direction is known.

## [0004]

## [Problem points solved by the invention]

However, according to the former case, because polishing surface is formed of high density fine abrasive grains, it presents a problem of decline in polishing performance due to early flattening with adhered polishing powder and the like.

## [0005]

Furthermore, according to the latter case, because end parts of short fibre are transplanted on a disc plate surface through an adhesive agent, it involves problems such as bending and damage cause by impact applied to ends of hair or not uniform polishing. In addition, because ends of hair are arranged in one diagonal rotary direction, the impact that is applied to ends of hair during polishing work is not only amplified significantly, but also directional feature during use is restricted as transplantation is made in one diagonal rotary direction.

[0006]

[Measures used to solve problem points]

The present invention offers disc grinder that is constructed to solve above-explained problem points; and as such measure, rod-shaped grains containing inorganic abrasive grains are prepared, and they are cohered and bonded through a binder to form a polishing layer, and this is adhered to a disc plate.

[0007]

[Actions]

According to this invention, said polishing layer comprises cohered and bonded rod-shaped grains containing inorganic abrasive grains to allow each individual grain to display a good polishing action. These rod-shaped grains are made to successfully surface on polishing surface to allow edges of these fibre and inorganic abrasive grains to synergistically work on a polishing surface in synergistic manner to improve polishing effect. It is possible to effectively solve the problems of prior art including bending and damage on fibre or their falling that is designed to simply transplant short fibre containing abrasive grains to form a disk grinder to allow a display of polishing effect of fibre without any hindrance.

[0008]

[Examples]

Examples of this invention are explained in detail below in reference with attached Figures 1 through 7.

[0009]

According to Figures 1 and 2, (1) shows a circular-shaped disc plate; and at the center part of this disc plate (1), shaft hole (2) that connects to drive shaft of a motor is arranged; and disc plate surface is constructed of a layer formed of polishing layer (3) as one body. Above-explained polishing layer (3) is formed in a ring-form disc shape by cohering and bonding rod-shaped grains (5) containing inorganic abrasive grains (4) through a binder (6).

[0010]

The above-explained inorganic abrasive grains (4) are of, for instance, abrasive grains of carborundum or alumina and the like. Above-explained rod-shaped grains (5) comprise mixtures of these inorganic abrasive grains and synthetic resin, for instance, aromatic group polyamide resin showing excellent heat resistance. Structures of these rod-shaped grains (5) may be understood through attached Figures 6 and 7.

[0011]

First of all, as shown in Figure 6, kneaded substance of inorganic abrasive grains (4) and aromatic group polyamide is molded in a flat shape; and abrasive sheet (7) that is flat and rigid is cut to long and narrow shapes to form long fibre (8) showing rigidity; and these long fibre (8) are cut short to form above-explained rod-shaped grains shown in Figure 4. When length of said rod-shaped grains (5) is made as too long, fibre density on the polishing layer (3) becomes excessively coarse; and on the other hand, when it is made in a fine grain form, there would be no difference from the case of forming the polishing layer (3) with said abrasive grains explained above to loose action as fibre containing abrasive grains (4).

[0012]

Because above-explained abrasive grains (4) mainly consist of about 50 to 400 mesh, it is recommended to set above-explained rod-shaped grains to within a range of 3 to 7 mm length (W) and 0.5 to 2 mm diameter thickness (R) as shown in the Figure 4.

[0013]

As for the abrasive sheet (7) explained above, for instance, use of Kornex [transliteration] product name made by Teijin Kabushiki Kaisha is possible; and this may be formed as long fibre (8) through cutting in narrow and long length as explained in reference to Figures 5 and 6; and these long fibre (8) may be cut from imaginary lines shown in Figure 7 to form rod-shaped grains (5). And therefore, these rod-shaped grains show sectional shape of so-called square shape to display their edge effect. In addition, these rod-shaped grains enclose parts of abrasive grains (4) as shown in the Figure 5 while the other parts are exposed to surface from surrounding planes of fibre.

[0014]

As explained above, said polishing layer (3) is formed by cohering and bonding numerous numbers of above-explained rod-shaped grains (5) with a binder (6). As for the binder (6), synthetic resin such as nylon or polypropylene and the like may be used as the main material to knead this synthetic resin flowing substance with above-explained rod-shaped grains (5) and to mold and solidify this with compression in a ring form disc shape. The polishing layer (3) formed in such manner is firmly adhered to a circular-shape disc plate (1) through an adhesive agent (9) as shown in the Figures 1 and 2 to form a disc grinder.



[0015]

[Effects of this invention]

The disc grinder formed in above-explained manner has an abrasive plane on which individual rod-shaped grain containing inorganic abrasive grains is cohered and bonded through a binder; and individual abrasive grain of said rod-shaped grain and abrasive grain work synergistically on a polishing plane to display a very good polishing effect while allowing successful appearance of rod-shaped grains and abrasive grains on surface to maintain above-explained polishing effect in uniform manner over long period of time.

[0016]

According to this invention, it is possible to offer a disc grinder that effectively utilizes polishing effect of fibre containing abrasive grains; and it is possible to improve defects of bending and damage of fibre or uneven polishing found in the disc grinder with transplantation of these fibre only.

[Brief explanation of the Figures]

[Figure 1]

It shows a plane view of disc grinder of partial omitted part.

[Figure 2]

It shows a sectional view of the same.

[Figure 3]

It shows an enlarged sectional view of a polishing layer.

[Figure 4]

It shows a diagonal view of rod-shaped grain.

[Figure 5]

It shows an enlarged sectional view of the same.

[Figure 6]

It shows a diagonal view of abrasive sheet that forms long fibre.

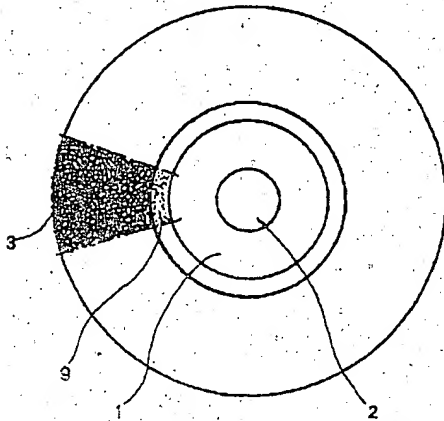
[Figure 7]

It shows a diagonal view of long fiber that forms rod-shaped grains.

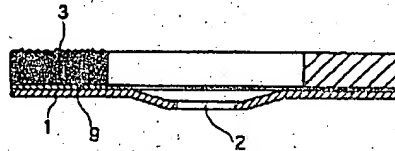
## [Description of codes]

- 1 disc plate
- 3 polishing layer
- 4 inorganic abrasive grain
- 5 rod-shaped grain
- 6 binder

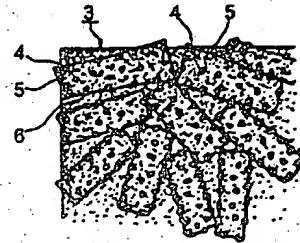
【图1】



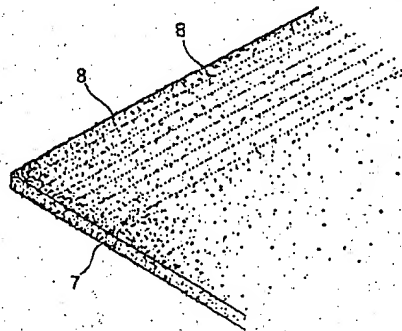
【图2】



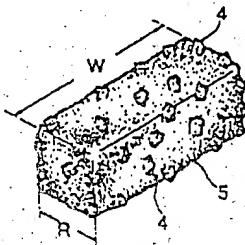
【图3】



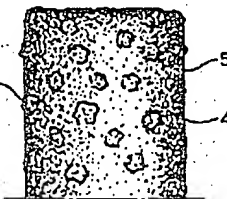
【图6】



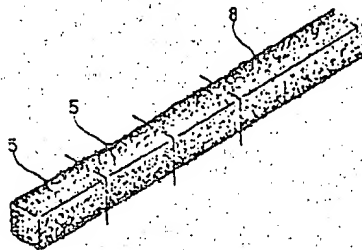
【图4】



【图5】



【图7】



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